

CLAIMS

What is claimed is:

1. A wireless network comprising:
a plurality of nodes that transmit and receive radio frequency (RF) signals; and
an access point that transmits and receives radio frequency (RF) signals, that wirelessly communicates with said plurality of nodes, that generates a table containing a list of nodes operating in said wireless network, and that broadcasts said table to said plurality of nodes,
wherein a first node of said plurality of nodes receives said table and determines a hidden status of a second node in said table.
2. The wireless network of claim 1 wherein said first node communicates directly with said second node if said second node has a not hidden status and communicates with said second node through said access point if said second node has a hidden status.
3. The wireless network of claim 2 wherein said second node communicates directly with said first node if said first node has a not hidden status and communicates with said first node through said access point if said first node has a hidden status.

4. The wireless network of claim 1 wherein said first node generates a backoff number.

5. The wireless network of claim 1 wherein said first node determines said hidden status for other nodes in said table when said access point sends a new table.

6. The wireless network of claim 1 wherein said first node updates said hidden status of a third node if said first node receives a signal from said third node.

7. The wireless network of claim 1 wherein said first node includes an aging timer for other nodes in said table and wherein said first node updates said hidden status of one of said other nodes if said aging timer of said other node expires.

8. The wireless network of claim 1 wherein said access point further includes a transmit packet counter that counts transmit packets generated by said access point.

9. The wireless network of claim 8 wherein said access point further includes a receive packet counter that counts receive packets received by said access point.

10. The wireless network of claim 9 wherein said access point further includes a cumulative packet byte counter.

11. The wireless network of claim 10 wherein said access point includes a network bandwidth utilization calculator.

12. The wireless network of claim 5 wherein said first node broadcasts an acknowledgement request to said other nodes in said wireless network when said new table is received.

13. The wireless network of claim 12 wherein said first node sets said hidden status of said other nodes equal to hidden if a response to said acknowledgement request is not received within a predetermined period and sets said hidden status of said other nodes equal to not hidden if a response to said acknowledgement is received within said predetermined period.

14. The wireless network of claim 1 wherein said table generated by said access point further includes at least one address for each of said plurality of nodes and an active/inactive status of each of said plurality of nodes.

15. The wireless network of claim 12 wherein said acknowledgement request is sent during idle periods.

16. The wireless network of claim 1 wherein said second node determines a hidden status of said first node and generates a second list, and wherein said first node broadcasts a first list containing said second node and said hidden status of said second node to said second node.

17. The wireless network of claim 16 wherein said second node compares said hidden status of said second node on said first list to said hidden status of said first node on said second list.

18. The wireless network of claim 17 wherein said second node sets said hidden status of said first node on said second list equal to hidden if said hidden status of said first node on said second list is not hidden and said hidden status of said second node on said first list is equal to hidden.

19. A method for operating a wireless network comprising:

- transmitting and receiving radio frequency (RF) signals using a plurality of nodes;
- wirelessly communicating with said plurality of nodes using an access point;
- generating a table containing a list of nodes operating in said wireless network using said access point;
- transmitting said table to said plurality of nodes;
- receiving said table at a first node; and
- determining a hidden status of a second node in said table using said first node.

20. The method of claim 19 wherein said first node communicates directly between with said second node if said second node has a not hidden status and communicates with said second node through said access point if said second node has a hidden status.

21. The method of claim 20 wherein said second node communicates directly with said first node if said first node has a not hidden status and communicates with said first node through said access point if said first node has a hidden status.

22. The method of claim 19 wherein said first node generates a backoff number.

23. The method of claim 19 further comprising determining said hidden status for other nodes in said table using said first node when said access point sends a new table to said first node.

24. The method of claim 19 further comprising updating said hidden status of a third node if said first node receives a signal from said third node.

25. The method of claim 19 further comprising providing an aging timer that is associated with said first node for other nodes in said table.

26. The method of claim 25 further comprising updating said hidden status of one of said other nodes if said aging timer of said other node expires.

27. The method of claim 19 further comprising counting transmit packets generated by said access point.

28. The method of claim 27 further comprising counting receive packets received by said access point.

29. The method of claim 28 further comprising calculating network bandwidth utilization.

30. The method of claim 23 wherein said first node broadcasts an acknowledgement request to said other nodes in said wireless network when said new table is received.

31. The method of claim 30 further comprising:

setting said hidden status of said other nodes equal to hidden if a response to said acknowledgement request is not received within a predetermined period; and

setting said hidden status of said other nodes equal to not hidden if a response to said acknowledgement is received within said predetermined period.

32. The method of claim 19 wherein said table generated by said access point further includes at least one address for each of said plurality of nodes and an active/inactive status of each of said plurality of nodes.

33. The method of claim 30 wherein said acknowledgement request is sent during idle periods.

34. The method of claim 19 further comprising:

determining a hidden status of said first node using said second node;

using said first node, generating a first list containing said second node and said hidden status of said second node;

using said second node, generating a second list containing said first node and said hidden status of said first node; and

broadcasting said first list using said first node.

35. The method of claim 34 further comprising:

using said second node, comparing said hidden status of said second node on said first list to said hidden status of said first node on said second list.

36. The method of claim 35 further comprising:

using said second node, setting said hidden status of said first node equal to hidden if said hidden status of said first node on said second list is not hidden and said hidden status of said second node on said first list is equal to hidden.

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37. A wireless network comprising:

a plurality of nodes that transmit and receive radio frequency (RF) signals; and

access means for transmitting and receiving radio frequency (RF) signals, for wirelessly communicating with said plurality of nodes, for generating a table containing a list nodes operating in said wireless network, and for broadcasting said table to said plurality of nodes,

first hidden status means, associated with a first node, for receiving said table and for determining a hidden status of a second node in said table.

38. The wireless network of claim 37 wherein said first node directly communicates with said second node if said second node has a not hidden status and communicates with said second node through said access point if said second node has a hidden status.

39. The wireless network of claim 37 wherein said first node further includes generating means for generating a random backoff number.

40. The wireless network of claim 37 wherein said first hidden status means of said first node determines said hidden status for other nodes in said table when said access point sends a new table.

41. The wireless network of claim 37 further comprising update means associated with said first hidden status means for updating said hidden status of a third node if said first node receives a signal from said third node.

42. The wireless network of claim 37 further comprising timing means associated with said first hidden status means for periodically updating said hidden status of at least one of said other nodes.

43. The wireless network of claim 37 wherein said access point further includes transmit packet counting means for counting transmit packets generated by said access point.

44. The wireless network of claim 43 wherein said access point further includes receive packet counting means for counting receive packets received by said access point.

45. The wireless network of claim 44 wherein said access point further includes cumulative packet byte counting means for counting cumulative packets.

46. The wireless network of claim 45 wherein said access point includes utilization calculating means for calculating network bandwidth utilization.

47. The wireless network of claim 40 further comprising acknowledgement means associated with said first node for broadcasting an acknowledgement request to said other nodes in said wireless network when said new table is received.

48. The wireless network of claim 47 wherein said first hidden status generating means sets said hidden status of said other nodes equal to hidden if a response to said acknowledgement request is not received within a predetermined period and sets said hidden status of said other nodes equal to not hidden if a response to said acknowledgement is received within said predetermined period.

49. The wireless network of claim 37 wherein said table generated by said access point further includes at least one address for each of said plurality of nodes and an active/inactive status of each of said plurality of nodes.

50. The wireless network of claim 37 wherein said acknowledgement request is sent during idle periods.

51. The wireless network of claim 37 further comprising second hidden status generating means associated with said second node for determining a hidden status of said first node, and wherein said first hidden status generating means of said first node broadcasts a first list containing said second node and said hidden status of said second node to said second node.

52. The wireless network of claim 51 wherein said second hidden status generating means of said second node compares said hidden status of said second node on said first list to said hidden status of said first node on said second list.

53. The wireless network of claim 52 wherein said second hidden status generating means of said second node sets said hidden status of said first node equal to hidden if said hidden status of said first node on said second list is not hidden and said hidden status of said second node on said first list is equal to hidden.

54. A node in a wireless network comprising:

a transmitter of radio frequency (RF) signals;

a receiver of RF signals;

a hidden status generator that communicates with said transmitter and said receiver, that receives a table containing a list nodes that are operating in said wireless network and that determines a hidden status of a second node in said table.

55. The node of claim 54 wherein said node communicates directly with said second node if said second node has a not hidden status and communicates with said second node through an access point if said second node has a hidden status.

56. The node of claim 54 wherein said node includes a random backoff number generator.

57. The node of claim 54 wherein said node determines said hidden status of other nodes in said table when an access point sends a new table.

58. The node of claim 54 wherein said node updates said hidden status of a third node if said node receives a signal from said third node.

59. The node of claim 54 further comprising an aging timer for other nodes in said table and wherein said node updates said hidden status of said other nodes if said aging timer for said other node expires.

60. The node of claim 57 wherein said node broadcasts an acknowledgement request to said other nodes in said wireless network when said new table is received.

61. The node of claim 60 wherein said node sets said hidden status of said other nodes equal to hidden if a response to said acknowledgement request is not received within a predetermined period and sets said hidden status of said other nodes equal to not hidden if a response to said acknowledgement is received within said predetermined period.

62. The node of claim 54 wherein said acknowledgement request is sent during idle periods.

63. The node of claim 54 wherein said node broadcasts a first list containing said second node and said hidden status of said second node.

64. A node in a wireless network comprising:

transmitting means for transmitting radio frequency (RF) signals;

receiving means for receiving RF signals;

hidden status generating means that communicates with said transmitting and receiving means for receiving a table containing a list nodes that are operating in said wireless network and for determining a hidden status of a second node in said table.

65. The node of claim 64 wherein said node communicates directly with said second node if said second node has a not hidden status and communicates with said second node through an access point if said second node has a hidden status.

66. The node of claim 64 further comprising random number generating means that communicates with said hidden status generating means for generating a random backoff number.

67. The node of claim 64 wherein said hidden status generating means determines said hidden status of other nodes in said table when an access point sends a new table.

68. The node of claim 64 wherein said hidden status generating means updates said hidden status of a third node if said node receives a signal from said third node.

69. The first node of claim 64 further comprising timing means associated with said hidden status generating means for periodically updating said hidden status of at least one of said other nodes.

70. The node of claim 67 wherein said hidden status generating means broadcasts an acknowledgement request to said other nodes in said wireless network when said new table is received.

71. The node of claim 70 wherein said hidden status generating means sets said hidden status of said other nodes equal to hidden if a response to said acknowledgement request is not received within a predetermined period and sets said hidden status of said other nodes equal to not hidden if a response to said acknowledgement is received within said predetermined period.

72. The node of claim 64 wherein said acknowledgement request is sent during idle periods.

73. The node of claim 64 wherein said hidden status generating means broadcasts a first list containing said second node and said hidden status of said second node.

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74. A method for operating a node in a wireless network comprising:
receiving a table containing a list nodes that are operating in said
wireless network; and
determining a hidden status of a second node in said table.

75. The method of claim 74 further comprising:
communicating directly with said second node if said second node
has a not hidden status; and
communicating with said second node through an access point if
said second node has a hidden status.

76. The method of claim 74 further comprising generating a random
backoff number.

77. The method of claim 74 further comprising determining said hidden
status for other nodes in said table when an access point sends a new table.

78. The method of claim 74 further comprising updating said hidden
status of a third node if said node receives a signal from said third node.

79. The method of claim 74 further comprising periodically updating
said hidden status of one of said other nodes.

80. The method of claim 77 further comprising broadcasting an acknowledgement request to said other nodes in said wireless network when said new table is received.

81. The method of claim 80 further comprising:

setting said hidden status of said other nodes equal to hidden if a response to said acknowledgement request is not received within a predetermined period; and

setting said hidden status of said other nodes equal to not hidden if a response to said acknowledgement is received within said predetermined period.

82. The method of claim 74 further comprising broadcasting said acknowledgement request during idle periods.

83. The method of claim 74 further comprising broadcasting a first list containing said second node and said hidden status of said second node.